

FLOOR CLEANING WIPE

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FLOOR CLEANING WIPE

Field of Invention

The present invention relates to a floor cleaning wipe which comprises a water insoluble substrate which has been impregnated with a liquid floor cleaning composition.

Background of the Invention

The patent literature describes numerous wipes for both body cleaning and cleaning of hard surfaces but none describe the instant cleaning wipes which have improved cleaning characteristics in the minimization of streaking and residue, together with optimum mileage.

U.S. Patent Nos. 5,756,612; 5,763,332; 5,908,707; 5,914,177; 5,980,922 and 6,168,852 teach cleaning compositions which are inverse emulsions.

U.S. Patent Nos. 6,183,315 and 6,183,763 teach cleaning compositions containing a proton donating agent and having an acidic pH.

U.S. Patent Nos. 5,863,663; 5,952,043; 6,063,746 and 6,121,165 teaches cleaning compositions which are water emulsions.

Summary of the Invention

A floor cleaning wipe for cleaning floors comprises a water insoluble substrate consisting of two layers which is impregnated with a liquid cleaning composition containing tall oil soap, a sultaine surfactant, an amine oxide, a perfume, a preservative and water, wherein the liquid cleaning composition is not an emulsion and does not contain a sulfate or sulfonate surfactant, proteins, metallic salts, enzymes, amides, sodium hypochlorite, dimethicone, N-methyl-2-pyrrolidone, monoalkyl phosphate or silicon based sulfosuccinate.

Detailed Description of the Invention

The present invention relates to a floor cleaning wipe for hard surfaces which comprises approximately:

(a) 5 wt. % to 20 wt. % of a water insoluble substrate formed from two layers;
and

(b) 80 wt. % to 95 wt. % of a liquid floor cleaning composition being
impregnated in said water insoluble substrate, wherein said liquid cleaning composition
5 comprises:

(i) 0.05 wt. % to 0.5 wt. %, more preferably 0.075 wt. % to 0.25 wt. %
of at least one alkali metal salt of a long chain unsaturated fatty acid having about 8 to
about 24 carbon atoms such as a refined tall oil fatty acid;

(ii) 0.001% to 0.01% of a sultaine surfactant;

(iii) 0.001% to 0.01% of an amine oxide surfactant;

(iv) 0 wt. % to 0.7 wt. %, more preferably 0.01 wt. % to 0.05 wt. % of a
preservative;

(v) 0.01 to 0.5 wt. % of a perfume;

(vi) 0 to 0.4 wt. %, more preferably 0.01 to 0.2 wt. % of a metal
chelant; and

(vii) the balance being water, wherein the composition has a pH of
about 9 to about 11, more preferably about 9.4 to about 10.6.

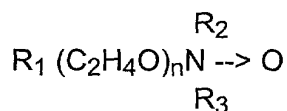
As used herein and in the appended claims the term "perfume" is used in its
ordinary sense to refer to and include any non-water soluble fragrant substance or
20 mixture of substances including natural (i.e., obtained by extraction of flower, herb,
blossom or plant), artificial (i.e., mixture of natural oils or oil constituents) and
synthetically produced substance) odoriferous substances. Typically, perfumes are
complex mixtures of blends of various organic compounds such as alcohols,
aldehydes, ethers, aromatic compounds and varying amounts of essential oils (e.g.,
25 terpenes) such as from 0% to 80%, usually from 10% to 70% by weight, the essential
oils themselves being volatile odoriferous compounds and also serving to dissolve the
other components of the perfume.

In the present invention the precise composition of the perfume is of no
particular consequence to cleaning performance so long as it meets the criteria of

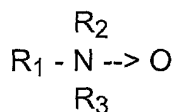
having a pleasing odor. Naturally, of course, especially for cleaning compositions intended for use in the home, the perfume, as well as all other ingredients, should be cosmetically acceptable, i.e., non-toxic, hypoallergenic, etc.. The instant compositions show a marked improvement in ecotoxocity as compared to existing commercial products.

The preferred long chain unsaturated fatty acids of the instant invention have about 8 to about 24 carbon atoms, more preferably about 10 to about 20 carbon atoms. A preferred unsaturated fatty acid mixture is a refined tall oil fatty acid. A typical tall oil fatty acid contains mono unsaturated C₁₆₋₁₈ fatty acid; a C₁₈ diene unsaturated fatty acid; a C₁₆₋₁₈ triene unsaturated fatty acid; and a C₁₆₋₁₈ saturated fatty acid. Other unsaturated fatty acids that are usable in the instant compositions are unsaturated vegetable oil fatty acids, including soy, peanut, corn, cottonseed, linseed and refined oleic fatty acids, and fatty acids consisting predominantly of C₁₈ (average) unsaturated fatty acids and mixtures thereof. The unsaturated fatty acid reacts in situ with the alkali metal hydroxide to form the alkali metal salt of the unsaturated fatty acid.

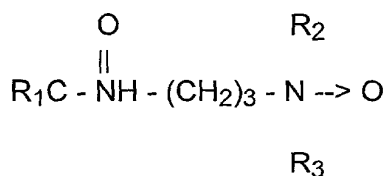
The composition contains about 0.001 wt. % to about 0.01 wt. % of an amine oxide, more preferably about 0.003 wt. % to about 0.08 wt. %. The preferred amine oxide is cocoamido-propyldimethyl amine oxide. The amine oxide is depicted by the formula:



wherein R₁ is an alkyl, 2-hydroxyalkyl, 3-hydroxyalkyl, or 3-alkoxy-2-hydroxypropyl radical in which the alkyl and alkoxy, respectively, contain from about 8 to about 18 carbon atoms; R₂ and R₃ are each methyl, ethyl, propyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, or 3-hydroxypropyl; and n is from 0 to about 10. Particularly preferred are amine oxides of the formula:

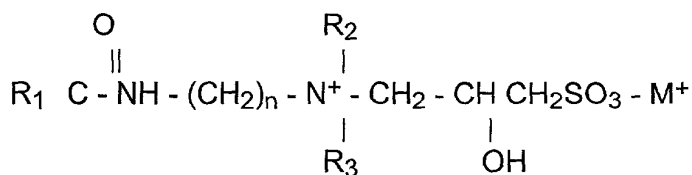


wherein R₁ is a C₁₂₋₁₈ alkyl and R₂ and R₃ are methyl or ethyl. The above ethylene
oxide condensates, amides, and amine oxides are more fully described in U.S. Pat. No.
4,316,824 (Pancheri), incorporated herein by reference. An especially preferred amine
oxide is depicted by the formula:



wherein R₁ is a saturated or unsaturated alkyl group having about 6 to about 24 carbon
atoms, R₂ is a methyl group, and R₃ is a methyl or ethyl group. The preferred amine
oxide is cocoamidopropyl-dimethylamine oxide.

The composition also contains about 0.001 wt. % to about 0.01 wt. %, more
preferably about 0.003 wt. % to about 0.08 wt. % of a sultaine which is preferably a
cocoamido-propylhydroxy sultaine. The sultaine can be depicted by the formula:



wherein R₁ is a saturated or unsaturated alkyl group having about 6 to about 24 carbon
atoms, R₂ is a methyl or ethyl group, R₃ is a methyl or ethyl group, M⁺ is about 1 to
about 6, and n⁺ is an alkali metal cation. The most preferred hydroxysultaine is a
potassium salt of cocoamidopropyl hydroxysultaine.

The combination of the amine oxide and the sultaine functions to serve as a
viscosity control agent while functioning as a means for the dispersion of lime soap.

The final essential ingredient in the instant composition is water. The proportion
of water in the compositions generally is in the range of 98 wt. % to 99.8 wt. %.

The floor cleaning composition of this invention may, if desired, also contain
other components either to provide additional effect or to make the product more

attractive to the consumer. The following are mentioned by way of example: Colors or dyes in amounts up to 0.5%. The preservative is selected from the group consisting of formaldehyde, iodo propynyl butyl carbamate, 5-bromo-5-nitro-dioxan^{1,3}; 5chloro-2-methylisothalizin-3-one. Typical methyl chelating agents are ethylene diamine
5 tetraacetate acid-sodium salt, hydroxy ethylene theylene diamine triacetic acid-trisodium salt and ethylene diamine disuccinate pH adjusting agents, such as sulfuric acid or sodium hydroxide, can be used as needed.

The cleaning compositions are prepared by simple batch mixing at 25°C-30°C. The water insoluble substrate is impregnated with the liquid cleaning composition by means of a positive impregnation process. The liquid is positively fed into the water
10 insoluble substrate through a controlled gear pump and injection bar at a ratio of about 6 to 9 grams of liquid cleaning composition to about 1 gram of the nonwoven fabric.

The water insoluble substrate can be square, rectangular, oval, circular or any other geometrically shape such that the water insoluble substrate can be readily
15 attached to the head of a mop having a similar geometrical shape. The water insoluble substrate comprises two layers which are bonded together at least along the peripheral outer edges of the two layers, wherein the bonding can be any suitable means such as mechanical, ultrasonic or chemical means. One of the layers is a hydrophobic chemically bonded polyester nonwoven fabric and comprises 5 wt. % to 25 wt. % of the
20 water insoluble substrate and the other layer is needle punched cellulose nonwoven fabric which comprises 75 wt. % to 95 wt. % of the water insoluble substrate.

Preferred water insoluble substrate is manufactured by the American Nonwoven Corporation and designated as 2380.

The following example illustrates a liquid cleaning composition of the described
25 invention. The exemplified composition is illustrative only and does not limit the scope of the invention. Unless otherwise specified, the proportions in the examples and elsewhere in the specification are by weight.

Example 1

The following floor cleaning wipes were made by the aforementioned process

	A
Part I	Wt. %
HEDTA	0.104
Tall oil fatty acid	0.124
KOH4	0.024
Cocoamidopropylamine oxide	0.005
Cocoamidopropylhydroxy sultaine	0.004
Formaldehyde	0.035
Perfume	0.034
Water	Bal.
Part II	
Part I	89.1
American Nonwoven 2380-2	10.9

While particular embodiment of the invention and the best mode contemplated by the inventor for carrying out the invention have been shown, it will be understood, of course, that the invention is not limited thereto since modifications may be made by those skilled in the art, particularly in light of the foregoing teachings. It is, therefore, contemplated by the appended claims to cover any such modifications as incorporate those features which constitute the essential features of these improvements within the true spirit and scope of the invention.